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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,965	03/31/2004	David Johnson	074361.00024	7714

7590

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EXAMINER

DEO, DUY VU NGUYEN

ART UNIT

PAPER NUMBER

1765

DATE MAILED: 01/12/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/815,965

Applicant(s)

JOHNSON ET AL.

Examiner

DuyVu n. Deo

Art Unit

1765

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 31 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-9, 15-26, 32 and 33 is/are rejected.
- 7) ☒ Claim(s) 10-14 and 27-31 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date 9/14/04.
- ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claim 33 is rejected under 35 U.S.C. 102( b) as being anticipated by admitted prior art.

Admitted prior art, page 4, describes a conventional method for controlling pressure in a vacuum chamber comprising: measuring actual pressure in the container and converted to electrical signal (this step would have to set the throttle valve at a predetermined position set point for a period of time for the measuring of the actual pressure); generating a regulation signal that represents the different between the actual pressure and a command pressure (this would read on claimed enabling a closed loop pressure control algorithm); directing the valve in a manner that the valve member is adjustable between intermediate positions within a range between the open and closed positions of the valve using the regulation signal (this would read on claimed introducing into the container a gas and controlling pressure at a recipe specified pressure set point in the container through closed loop control).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1-9, 15-26, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over admitted prior art.

Referring to claims 1 and 18, even though admitted prior art doesn't describe controlling the pressure in at least one step of the time division multiplex, or TDM; however, it shows that it is well known to one skilled in the art that the throttle valves in TDM process tools are operated in the same principles (page 4 of the specification), therefore, one skilled in the art would find it obvious to use above pressure regulator steps in a TDM process in order to control the pressure with a reasonable expectation of success.

Referring to claim 1, the TDM process for etching the silicon further comprises steps: subjecting the substrate to alternating cyclical process having etching and depositing step; introducing a first depositing gas and a second etching gas into the chamber; igniting a plasma for depositing and etching step (pages 1-3 of the specification).

Referring to claims 2-5, 9, 19-22, 26 the predetermined position set point in the beginning of the TDM process would have to be based on the similar or like step or prior calibration experiments and then when the actual pressure in the chamber is measured and corrected or controlled (claims 6-8, 23-25), the throttle valve position of the current step (or predetermined position set point) would be adjusted by an offset from the throttle valve position of the previous like step.

Referring to claims 15, 32 the predetermined period of time would have to be depending on how long it takes to measure the actual pressure in the container.

Referring to claims 16, 17, the first depositing gas and second etching gas are C<sub>4</sub>F<sub>8</sub>, and SF<sub>6</sub> respectively (page 2 of the specification).

***Allowable Subject Matter***

5. Claims 10-14, 27-31 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claims 10 and 27 are allowable because applied prior art doesn't teach or suggest the modification to the predetermined position set point is based on minimizing time to reach the recipe specified pressure set point.

Claims 11 and 28 are allowable because applied prior art doesn't teach or suggest the modification to the predetermined position set point is based on minimizing deviation from the recipe specified pressure set point.

Claims 12-14, and 29-31 are allowable because applied prior art doesn't teach or suggest the predetermined period of time is modified based on pressure performance of a preceding like step of the alternating cyclical process.

***Drawings***

6. Figures 3-5 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n. Deo whose telephone number is 571-272-1462. The examiner can normally be reached on 6:00-2:30 Mon-Fri.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Primary Examiner  
Duy-Vu N. Deo  
1/10/06

